C.8 OHIO FIELD OFFICE SUMMARY

NOTE: This site summary provides information and data for sites under the Department's Ohio Field Office. The data for this summary were collected in 1999 and do not necessarily reflect funding or completion profiles for the site. The data do not include changes that resulted from actual FY 2000 appropriations or anticipated changes as a result of both FY 2000 supplemental and FY 2001 budget requests. The Department is in the process of updating its life-cycle information for the EM program.

The 1999 data were the basis for DOE's *Status Report on Paths to Closure* (March 2000). The costs in the "Cost and Completion Date" section of this summary are the sum of the project planning baselines prepared by the field office and generally do not include estimates of project uncertainty. On the other hand, the cost range in the national status report includes an estimate of the cost resulting from project uncertainties, and EM's overall estimate of life-cycle costs of $151-195 billion from FY 2000 to FY 2070 (or $168-$215 billion if the costs incurred between FY 1997 and FY 2000 are included in the cost range estimate).

The Ohio Field Office manages four sites in the State of Ohio and one in the State of New York. The sites in Ohio are the Ashtabula Environmental Management Project (formerly known as the RMI Extrusion Plant); the Columbus Environmental Management Project (formerly the Battelle Columbus Laboratories--two sites); the Fernald Environmental Management Project; and the Miamisburg Environmental Management Project. The West Valley Demonstration Project is located in New York. The Ohio Field Office's current baselines reflect completion of its Environmental Management (EM) cleanup mission at all sites in the state of Ohio by 2008. However, through acceleration and enhanced performance, the goal is to finish these sites by 2006. The West Valley Demonstration Project is projected to be complete by the end of 2015, providing a number of assumptions regarding the completion process are realized including timely negotiation of responsibility between the Department of Energy (DOE) and the State of New York.

The ***Ashtabula Environmental Management Project*** (AEMP) encompasses the cleanup activities at the RMI Titanium Company Extrusion Plant, a privately owned facility. From 1962 to 1988, the company received uranium billets and processed them into various shapes for fuel and target fabrication use by DOE and its predecessor agencies. The company also performed work for the Department

of Defense and a number of commercial entities under a Nuclear Regulatory Commission (NRC) License. Twenty-six years of handling, extruding, forging, and machining uranium at the facility have resulted in on-site and off-site contamination of buildings and environmental media.

The ***Columbus Environmental Management Project*** (CEMP) decommissioning project consists of 15 buildings and associated grounds at two geographically distinct sites (***West Jefferson*** and ***King Avenue***) in and adjacent to Columbus, Ohio. Between 1943 and 1986, the Battelle Memorial Institute (Battelle) performed atomic energy research and development for DOE and its predecessor agencies. As part of the government's fuel and target fabrication program, Battelle participated in nuclear research activities that included fabrication of uranium and fuel elements, reactor development, submarine propulsion, fuel reprocessing, and safety studies of reactor vessels and piping.

The uranium metal production facilities at the ***Fernald Environmental Management Project*** (FEMP) were constructed in the early 1950s to convert uranium ore into uranium metal for the nation's Defense Programs. Production operations continued for more than 36 years, until DOE suspended them on July 10, 1989.

In 1947, the Dayton Project of the Manhattan Engineering District became the Mound site. Cleanup activities at the Mound site are carried out under the ***Miamisburg Environmental Management Project*** (MEMP). MEMP's early mission included nuclear materials research. Later missions included process development, production engineering, manufacturing and surveillance of detonators, explosive timers, transducers, firing sets, explosive pellets, components, and specific test equipment. Additional activities at MEMP included recovering and purifying tritium, research and development, and production of radioisotopic thermonuclear generators for land and space applications.

From 1966 to 1972, Nuclear Fuel Services, Inc., operated a commercial nuclear fuel reprocessing plant at the Western New York Nuclear Services Center under contract to the State of New York. The plant, now referred to as the ***West Valley Demonstration Project*** (WVDP), reprocessed uranium and plutonium from spent nuclear fuel, generating approximately 2.3 million liters (600,000 gallons) of liquid high-level waste (HLW) that was stored in underground tanks. In 1972, nuclear fuel reprocessing operations were discontinued. In 1980, the U.S. Congress passed the WVDP Act (Public Law 96-368), requiring the DOE to solidify the liquid HLW, dispose of the resultant HLW canisters, dispose of low-level waste (LLW) and transuranic (TRU) waste produced by the HLW

solidification effort, and decontaminate and decommission the facilities used for the WVDP according to the NRC prescribed criteria.

C.8.1 End State

Each of the sites under the Ohio Field Office has a plan in place or proposed for end state. The office is currently working on plans for site access and long-term stewardship at the two the non-NRC regulated sites (FEMP and MEMP) as well as West Valley. Exhibit C.8-1 provides a summary of the anticipated site end states for the Ohio Field Office.

Exhibit C.8-1
Summary of Ohio Field Office End States

Site Name	End State Description
Columbus Environmental Management Project–King Avenue (CEMP)	All building decontamination at King Avenue was completed in FY 1998 (with the exception of a short buried drain segment under Building 7 which will be removed in FY 2000). The nine buildings were returned to Battelle for reuse without radiological restrictions. All waste streams, primarily uranium and thorium, were shipped off site for disposal. The King Avenue site will be completed in FY 2000 following the final survey of external areas.
Columbus Environmental Management Project–West Jefferson (CEMP)	The West Jefferson site will be complete in FY 2005. The current plan is to demolish the affected buildings and return the site back to Battelle in a condition for use without radiological restrictions. All waste streams will be shipped off site for treatment, storage, or disposal.

Exhibit C.8-1
Summary of Ohio Field Office End States

Site Name	End State Description
Fernald Environmental Management Program (FEMP)	FEMP will be left in an end state agreed to by the Fernald Citizens Advisory Board and the Community Reuse Organization, although it will still fall under federal ownership. Stakeholders have recommended that specific future use of the site should be determined closer to the time of reuse, but residential and agricultural activities should be avoided. The greatest potential for future use is recreational and industrial. The Ohio Field Office and the FEMP Office have targeted completion for the end of FY 2006. The current validated baseline reflects a closure date of FY 2008. FEMP will construct a large on-site disposal facility to contain up to 2.5 million cubic yards of LLW with radiological and/or chemical concentrations exceeding free release limits. There will be controlled access to the disposal facility. FEMP will install infrastructure to restore the aquifer to a 20 parts per billion uranium contamination level through extraction and treatment of groundwater.
Miamisburg Environmental Management Project (MEMP)	Soil remediation to industrial use levels (of approximately 1×10^{-5} reduced risk) is targeted for completion in 2004, at which time the transfer of the site to the Miamisburg Mound Community Improvement Corporation (MMCIC) will be completed. In FY 1999, the first two parcels were transferred to MMCIC. MMCIC was formed in order to faciliatate commercialization of the site as DOE completes its cleanup work. EM will remain the landlord, though the Office of Nuclear Energy (NE) will have a continuing mission on a small portion of the site. The landlord costs and cleanup requirements for NE buildings are the responsibility of NE. The goal is to remediate volatile organic compound-contaminated off-site groundwater to a residential level prior to FY 2004. Further definition of cleanup goals for several on-site disposal areas involving regulators and stakeholders could result in significant changes to the MEMP baseline and end state. Excess nuclear materials will be off site in FY 2000. Currently, MEMP is targeted for completion by 2004. Site inspections (long term surveillance and maintenance) will be conducted through FY 2070 at an estimated cost of $50,000 per year.

Exhibit C.8-1
Summary of Ohio Field Office End States

Site Name	End State Description
Ashtabula Environmental Management Project (AEMP)	The end state for AEMP will be reached in 2005 when the site will be released to RMI. RMI will have sole responsibility for future land use. Future use is assumed to be industrial, consistent with surrounding property and zoning. Soils contaminated with uranium will be remediated to less than 30 pCi/g or less. Soil contaminated with both uranium and technetium-99 will be remediated in accordance with the recently imposed Nuclear Regulatory Commission (NRC) "Unity Rule." The NRC license will be terminated in 2005 when the property is released.
West Valley Demonstration Project (WVDP)	The 3300 acre site is owned by the state of New York but DOE has exclusive use and possession of a portion of the WVDP premises comprising 230 acres. Current planning level assumptions resulting from the ongoing development process associated with the Preferred Alternative/Final Environmental Impact Statement/Record of Decision, and in conjunction with the Waste Management-PEIS, indicate that DOE will have satisfied its responsibilities for WVDP according to the WVDP Act, Stipulation of Compromise Settlement, the Cooperative Agreement, and the Record of Decision (ROD) by the end of FY 2015. The end state for the WVDP, which is still under discussion, involves completion of HLW solidification, and shipment of HLW canisters, LLW, mixed low-level waste (MLLW), and TRU in accordance with the WVDP Act Stipulation of Compromise and ROD. The SNF is planned to be shipped to INEEL. Tanks and facilities will be decontaminated and decommissioned. Operational responsibility will be returned to the New York State Energy Research and Development Authority upon fulfillment of the WVDP Act.

C.8.2 Cost and Completion Dates

The Ohio Field Office has divided its EM work of the six sites into 36 discrete projects. A Project Baseline Summary (PBS) exists for each project and contains detailed programmatic information, including cost, schedule, scope, end state, and interim milestones. For additional information on these projects, refer to the individual PBSs.

The sum of the costs of the planning baselines for individual projects managed by the Ohio Field Office sites' cleanups is $6.1 billion (constant 1999 dollars) with

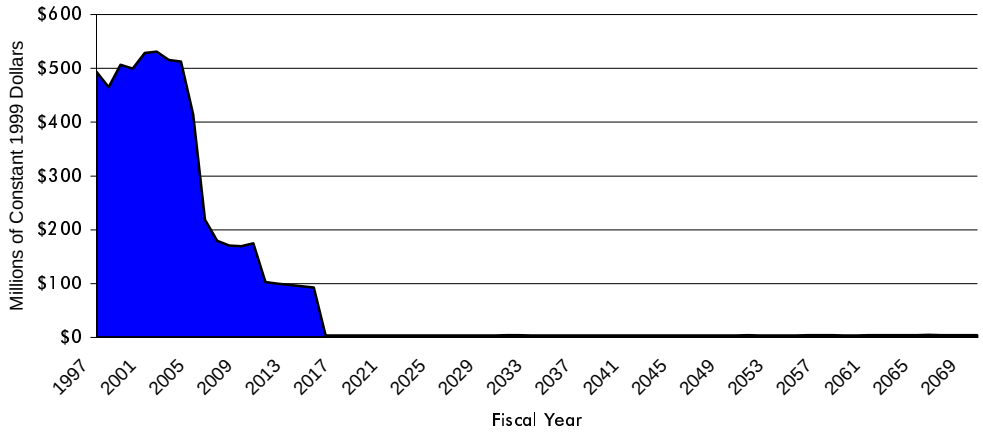
the last project in the State of Ohio ending in 2008. The WVDP is projected for completion by the end of 2015. Groundwater remediation and some surveillance and maintenance will continue beyond 2008 at some sites.

The overall site planned completion dates are as follows (excluding long-term surveillance and maintenance):

Site	Date
Columbus Environmental Management Project	
King Avenue Site	2000
Miamisburg Environmental Management Project	2004
Columbus Environmental Management Project	
West Jefferson Site	2005
Ashtabula Environmental Management Project	2005
Fernald Environmental Management Project	2006
West Valley Demonstration Project	2015

The projected cost profile for environmental management associated with the Ohio Field Office was developed by combining the cost estimates in each of the PBSs. Exhibit C.8-2 displays the resultant baseline cost profile.

Exhibit C.8-2
Ohio Field Office
Environmental Management Baseline Cost Profile



C.8.3 Accomplishments Since the 1998 *Paths to Closure* Report

Several of the sites under the management of the Ohio Field Office achieved notable successes in the time since the 1998 *Paths to Closure* report.

Accomplishments at FEMP include the following:

- Disposal of the first waste in the on-site disposal facility three months ahead of schedule;
- Received over 150,000 cubic yards at Cell 1 by the end of 1998;
- Resumed off-site shipments of waste to the Nevada Test Site after a one-year moratorium;
- Shipped nuclear materials to Portsmouth; and
- Conducted a safe shutdown of nuclear facilities.

Other sites also achieved major accomplishments as shown below:

- Completed Phase I of HLW vitrification and began the Phase II HLW Vitrification Campaign–Tank Heel Residuals– both ahead of schedule and under budget at WVDP;
- Completed decontamination and decommissioning (D&D) of Building KA-2, the last of nine buildings at King Avenue (with the exception of a short buried drain segment under Building 7 which will be removed in FY 2000) at CEMP;
- Completed major equipment remediation and received conditional NRC verification of Area D remediation at AEMP; and
- Sustained MEMP's significant waste and material removal efforts by shipping close to 300,000 cubic feet of low-level waste off site for disposal and demolishing/removing eight buildings from the site.

C.8.4 Work Scope Summary

EM's mission at the Ohio Field Office consists of various projects focused on the general tasks of D&D, excavation and treatment of contaminated soils, groundwater remediation, the vitrification of HLW at WVDP, along with many others. At the CEMP-King Avenue site, decontamination of nine affected buildings was completed in FY 1998 (with the exception of a short buried drain segment under Building 7, which will be removed in FY 2000). The current approach to remediation of the CEMP West Jefferson site requires that the highly contaminated contents of the hot cells be packaged and shipped for disposal as a first step. Reduction in this radioactive "source term" is necessary before any building decontamination can proceed. A careful program of waste sorting,

evaluation, and batch processing will minimize the volume of material, which will have to be shipped as costly TRU waste. It is now expected that a 90% reduction in originally projected TRU waste volumes is achievable. Once the waste is removed from the site, interior building decontamination can begin, in parallel with characterization of the external grounds. Use of the Pipe Explorer to survey buried drain lines is expected to result in free release of significant footage, thereby avoiding costs in excess of $1 million. Decontamination techniques will include pressure washing, vacuum grit blasting, and simple wiping of surfaces. Diamond wire saw technology is being considered for dismantlement of the JN-3 reactor bioshield and the hot cell shield walls. Remediation of contaminated soils will utilize the project's tested approach to field screening and volumetric release. Upon completion, the decontamination status of the site will be confirmed by an independent verification contractor, and the building/area is designated as suitable for use without radiological restrictions. DOE is considering a plan to raze the entire structure, thus eliminating any questions regarding the completeness of decontamination efforts.

At FEMP, the principal work scope in the baseline after FY 2006 is directly related to the Silos Project, Facilities Shutdown, D&D, and associated Program Support and Oversight activities. The most significant challenge FEMP faces is accelerating the Silos Project. Once FEMP is completed, the only remaining activities include finalization of waste management activities and closure of facilities, and in-process groundwater monitoring.

At AEMP, the remediation work scope of the RMI Extrusion facility will involve the deactivation of 26 on-site buildings and decontamination and/or demolition of 21 buildings, remediation of legacy waste and associated equipment, excavation and treatment/processing of radiologically contaminated soils, and ex-situ vapor stripping of groundwater.

At WVDP, the baseline consists of four projects. The first project encompasses the work scope involved in the solidification of liquid HLW into borosilicate glass using vitrification, and the processing of HLW tank residual waste. The second project encompasses activities required for removal of HLW canisters and TRU waste from project facilities, disposal of LLW and MLLW in accordance with the WVDP Act and Stipulation of Compromise as directed by the final Environmental Impact Statement ROD, and disposition of the remaining project responsibilities. The third project encompasses the work scope involved with the removal of the existing spent nuclear fuel inventory from the site. The fourth project encompasses the core activities required for safe operation of the site necessary to execute and manage the Project as directed by the WVDP Act

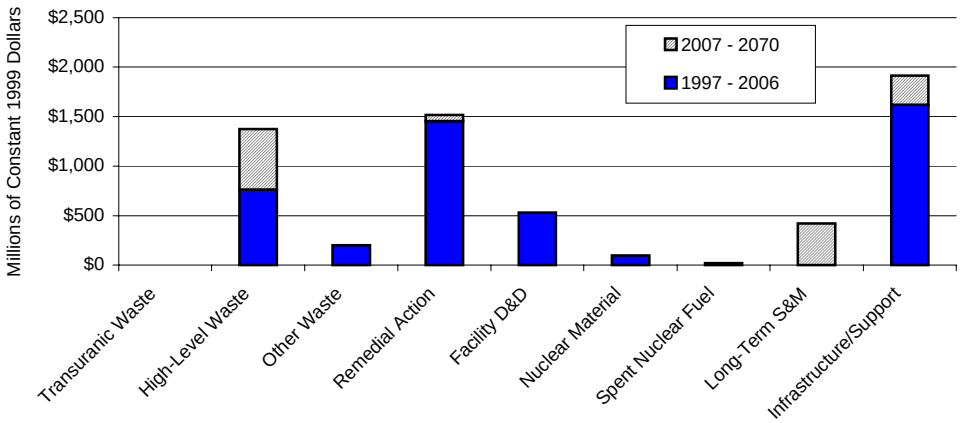
(Public Law 96-368). Project Management/Site Support activities are categorized two ways: site support and general support. Site support includes safeguards and security, base programs for regulatory compliance, environmental monitoring, safety and health, radiological control programs, analytical support programs, quality assurance programs, warehousing, and General Services Administration vehicles. Combined with general administrative support functions, these core site activities provide essential services to safely manage the site.

At MEMP, the work scope encompasses facility stabilization, disposition of excess nuclear material and ancillary equipment, environmental restoration, decommissioning, and waste management. The disposition of nuclear materials, including bulk tritium, was completed in FY 1998. Other excess nuclear materials disposition is targeted for FY 2000.

More information about work scope can be found at the following websites, which contain links to the conceptual summary disposition maps (http://emi-web.inel.gov/summary.html) and the detailed disposition maps (http://emi-web.inel.gov/dmaps.html) in PDF format.

Exhibit C.8-3 shows the distribution of Ohio Field Office EM costs by major category.

Exhibit C.8-3
Ohio Field Office
Life-Cycle Costs by Category for the Low End of Range Estimate



C.8.5 Critical Closure Path and Programmatic Risk

The critical closure path schedule presented as Exhibit C.8-4 sets forth the estimate for completing the closure activities at Ohio Field Office. The highlighted activities show the critical closure path, which represents the series of events that drive the overall completion date for the site.

Completion of the EM mission at the Ohio Field Office as scheduled will depend on stable funding and the timely accomplishment of critical activities and milestones. Sites have assigned programmatic risk scores to each of the critical activities/milestones. Exhibit C.8-5 presents a summary of milestones on the critical closure path that have high programmatic risk (programmatic risk scores of 4 or 5 in any category). Exhibit C.8-6 displays a summary of waste disposition data that have high programmatic risk (programmatic risk score of 4 or 5 in any category).

Exhibit C.8-4a
Ohio Field Office
Ashtabula Environmental Management Project Critical Closure Path

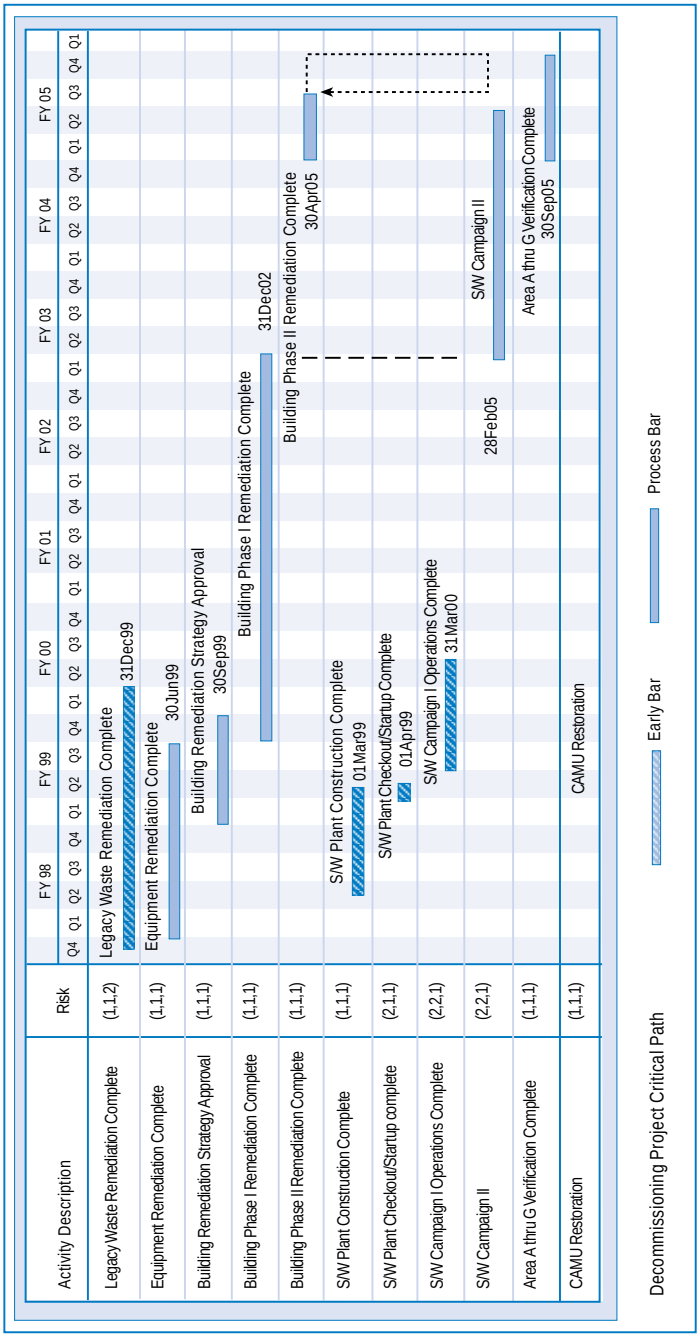


Exhibit C.8-4b
Ohio Field Office
Columbus Environmental Management Project Critical Closure Path

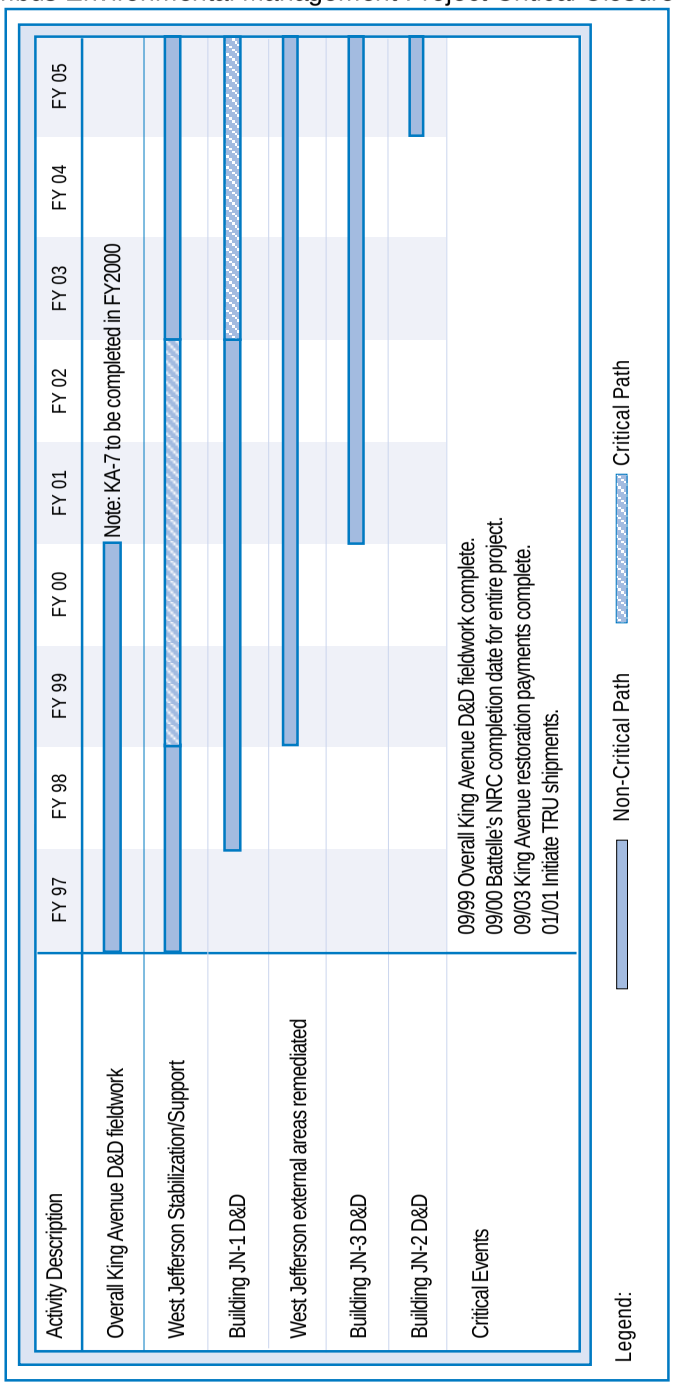


Exhibit C.8-4c
Ohio Field Office
Fernald Environmental Management Project Critical Closure Path

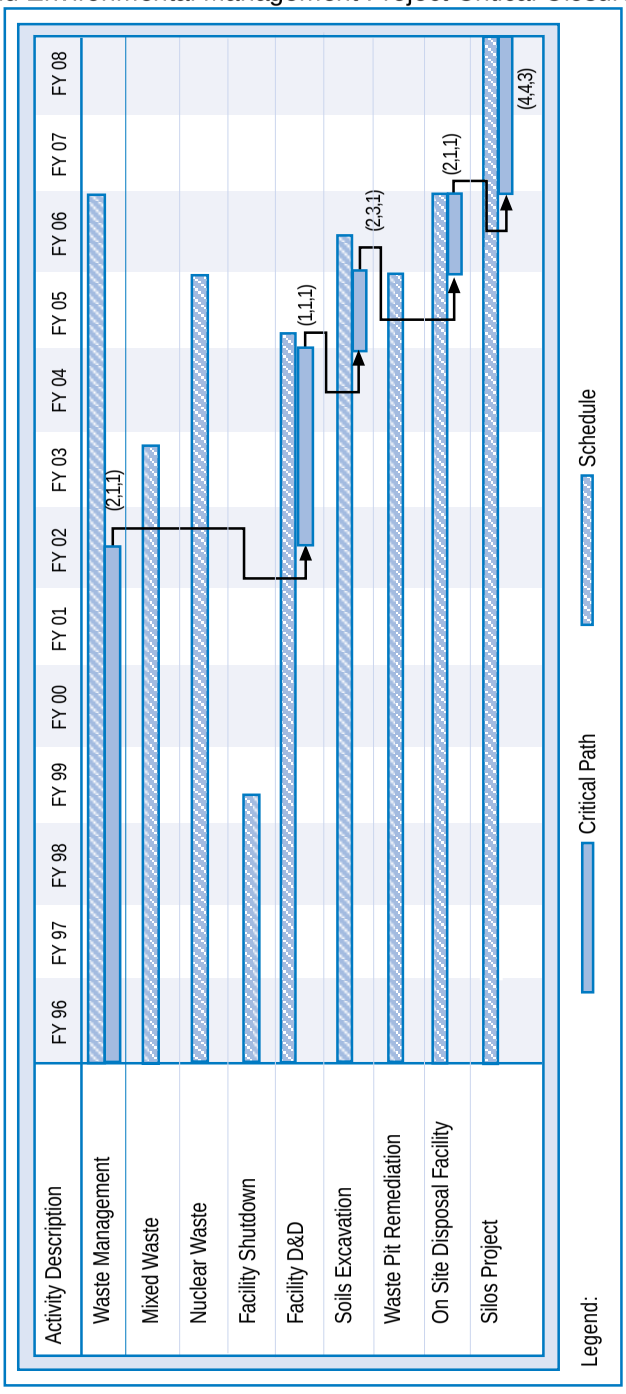
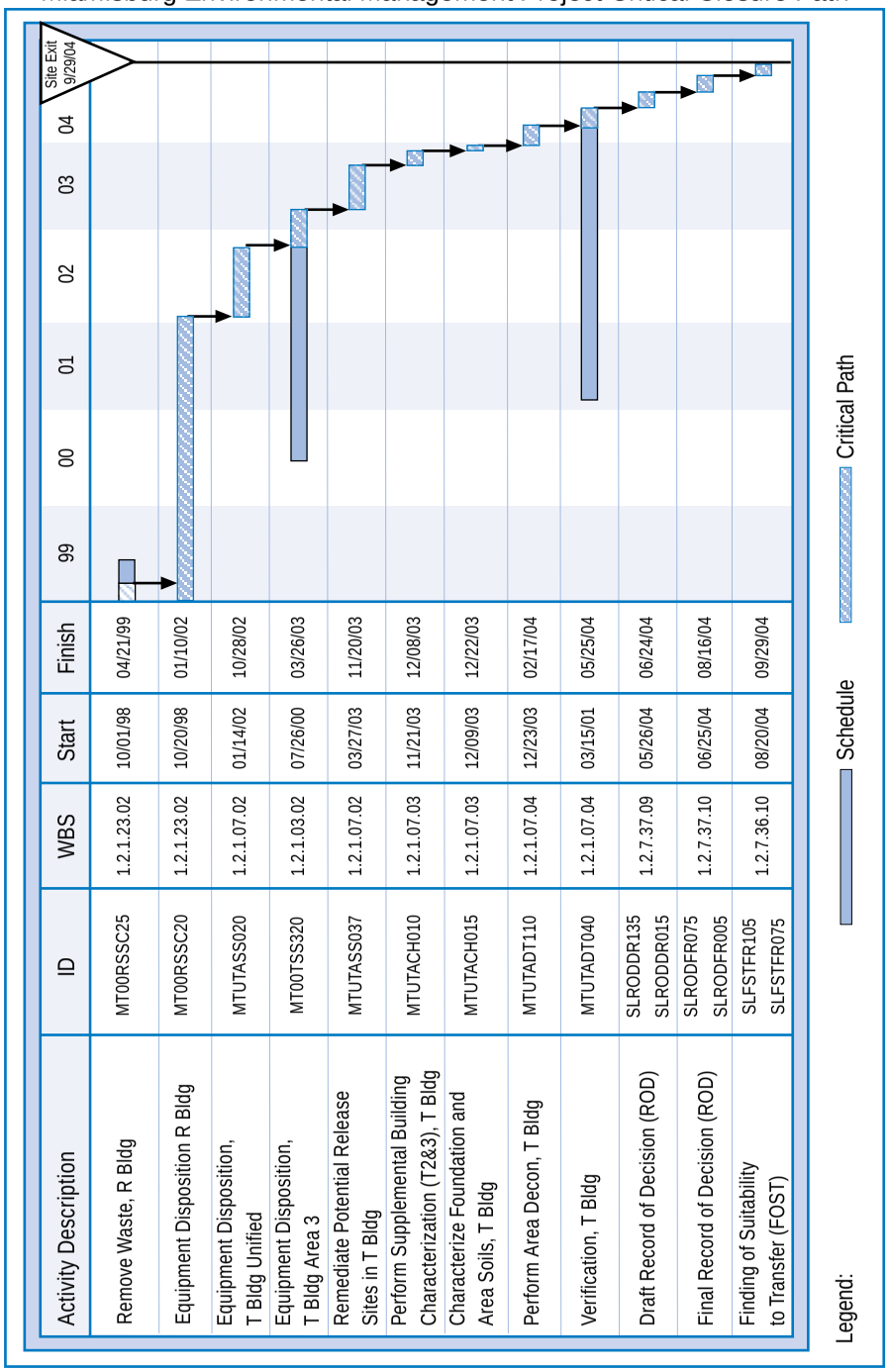
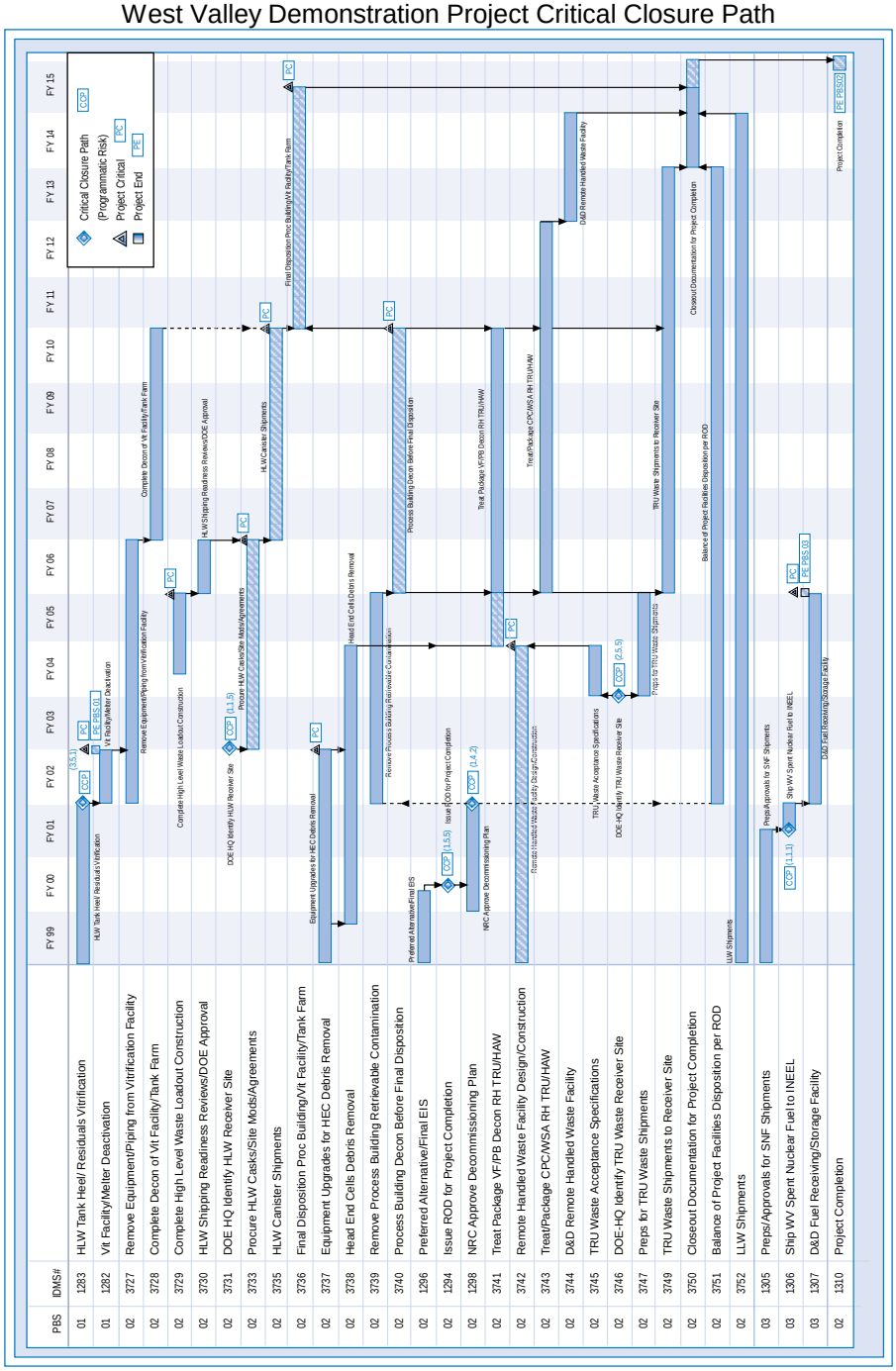


Exhibit C.8-4d
Ohio Field Office
Miamisburg Environmental Management Project Critical Closure Path



Activity Description	ID	WBS	Start	Finish
Remove Waste, R Bldg	MT00RSSC25	1.2.1.23.02	10/01/98	04/21/99
Equipment Disposition R Bldg	MT00RSSC20	1.2.1.23.02	10/20/98	01/10/02
Equipment Disposition, T Bldg Unified	MTUTASS020	1.2.1.07.02	01/14/02	10/28/02
Equipment Disposition, T Bldg Area 3	MT00TSS320	1.2.1.03.02	07/26/00	03/26/03
Remediate Potential Release Sites in T Bldg	MTUTASS037	1.2.1.07.02	03/27/03	11/20/03
Perform Supplemental Building Characterization (T2&3), T Bldg	MTUTACH010	1.2.1.07.03	11/21/03	12/08/03
Characterize Foundation and Area Soils, T Bldg	MTUTACH015	1.2.1.07.03	12/09/03	12/22/03
Perform Area Decon, T Bldg	MTUTADT110	1.2.1.07.04	12/23/03	02/17/04
Verification, T Bldg	MTUTADT040	1.2.1.07.04	03/15/01	05/25/04
Draft Record of Decision (ROD)	SLRODDR135 SLRODDR015	1.2.7.37.09	05/26/04	06/24/04
Final Record of Decision (ROD)	SLRODFR075 SLRODFR005	1.2.7.37.10	06/25/04	08/16/04
Finding of Suitability to Transfer (FOST)	SLFSTFR105 SLFSTFR075	1.2.7.36.10	08/20/04	09/29/04

Exhibit C.8-4e
Ohio Field Office
West Valley Demonstration Project Critical Closure Path



PBS	IDMS#	
01	1283	HLW Tank Heel/ Residuals Vitrification
01	1282	Vit Facility/Melter Deactivation
02	3727	Remove Equipment/Piping from Vitrification Facility
02	3728	Complete Decon of Vit Facility/Tank Farm
02	3729	Complete High Level Waste Loadout Construction
02	3730	HLW Shipping Readiness Reviews/DOE Approval
02	3731	DOE HQ Identify HLW Receiver Site
02	3733	Procure HLW Casks/Site Mods/Agreements
02	3735	HLW Canister Shipments
02	3736	Final Disposition Proc Building/Vit Facility/Tank Farm
02	3737	Equipment Upgrades for HEC Debris Removal
02	3738	Head End Cells Debris Removal
02	3739	Remove Process Building Retrievable Contamination
02	3740	Process Building Decon Before Final Disposition
02	1296	Preferred Alternative/Final EIS
02	1294	Issue ROD for Project Completion
02	1298	NRC Approve Decommissioning Plan
02	3741	Treat Package VF/PB Decon RH TRU/HAW
02	3742	Remote Handled Waste Facility Design/Construction
02	3743	Treat/Package CPC/WSA RH TRU/HAW
02	3744	D&D Remote Handled Waste Facility
02	3745	TRU Waste Acceptance Specifications
02	3746	DOE-HQ Identify TRU Waste Receiver Site
02	3747	Preps for TRU Waste Shipments
02	3749	TRU Waste Shipments to Receiver Site
02	3750	Closeout Documentation for Project Completion
02	3751	Balance of Project Facilities Disposition per ROD
02	3752	LLW Shipments
03	1305	Preps/Approvals for SNF Shipments
03	1306	Ship WV Spent Nuclear Fuel to INEEL
03	1307	D&D Fuel Receiving/Storage Facility
02	1310	Project Completion

Exhibit C.8-5
Ohio Field Office
Summary of High Programmatic Risk Milestones

Site	Project, Action, Event	Dates	Programmatic Risk Categories*		
			Technological	Work Scope Definition	Intersite Dependency
Columbus Environmental Management Project	Receive WIPP Certification	September 1999	1	2	4
	Design Interim Storage Location for CEMP TRU Waste	October 1999	1	3	5
	Initiate RH-TRU Shipment to Interim Storage Site	January 2001	3	4	4
West Valley Demonstration Project	Issue ROD for Project Completion	May 2000	1	5	5
	NRC Approval of Decommissioning Plan	September 2001	1	4	2
	Complete WV HLW Tank Heels & Residuals Vitrification Processing	September 2001	3	5	1
	DOE HQ Identify HLW Receiver Site	October 2002	1	1	5
	DOE HQ Identify TRU Receiver Site	September 2003	2	5	5

*For a discussion of programmatic risk categories, see Appendix D on the Internet site http://www.em.doe/closure/.

Exhibit C.8-6
Ohio Field Office
Summary of High Programmatic Risk Waste Disposition Data

Site	Stream Name	Waste Stream Activity Name	Programmatic Risk Categories*		
			Technological	Work Scope Definition	Intersite Dependency
Columbus Environmental Management Project	MLLW PCB Contaminated Rubble/Debris	Treatment/ Disposal	3	3	4
	TRU Contaminated Rubble/Debris	Collect & Treat	1	5	1
Fernald Environmental Management Project	LLW-Nuclear Mat'ls Enriched (Stabilized & Blended)	Disposal	1	5	1
West Valley Demonstration Project	Combined TRU Waste (Disposition Ready)	Disposal	2	3	4
	TRU Elemental Lead & Debris	Treatment	4	1	1

*For a discussion of programmatic risk categories, see Appendix D on the Internet site http://www.em.doe/closure/.